

REMARKS

The Examiner is thanked for the Official Action dated May 08, 2002 and the indication of allowable subject matter in this application. The above amendment and remarks to follow are intended to be fully responsive to the issues presented in that Action.

The drawings were objected to because several reference characters were improperly listed. Applicant has amended the specification to correct several errors with respect to the reference numerals. In addition, the Examiner asserts that the references numerals 464, 363, 459 were not shown on the drawings. Applicant submits that reference numerals 464 and 363 were included in Figure 58 and 52, respectively. Applicant has submitted a separate Letter to the Draftsperson providing a corrected Figure 49 showing reference numeral 459.

Applicant further submits that element 1068 appears on Figure 42. Applicant has also amended the specification to clearly describe the internal bore 1068 with regard to Figure 42. No new matter has been added.

The specification has been amended to include proper headings as required by the Examiner.

Applicant has presented an Abstract for entry into this application because it appears that the Abstract was inadvertently omitted from the original application papers. The Abstract submitted herewith was taken directly from the related international application (WO01/07801). No new matter has been entered.

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The claims were objected to for including incomplete parentheses "e.g., (61, 166, ...)".

Applicant has amended the claims to correct these parentheses.

Claims 1-44 were rejected under 35 U.S.C. §112, second paragraph, for including indefinite claim language. Applicant has amended the claims to address the issues raised by the Examiner. It is submitted that amended claims 1-14 conform to the requirements of 35 U.S.C. §112. No new matter has been entered.

Claims 1, 2, 5, 8-11, 20 and 26-28 were rejected under 35 U.S.C. 102(b) as being anticipated by Friedmann et al. (USP 5,377,796). Claims 1, 2, 5, 8-10 and 26-30 were rejected under 35 U.S.C. 102(b) as being anticipated by WIPO 99/10663. Claim 1 was rejected under 35 U.S.C. 102(b) as being anticipated by Ross (USP 4,177,885). Claims 2, 3, 4, 12 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Friedmann et al. '796 in view of Ross '885. Claims 6, 7, 15 29-32 and 35 were rejected under 35 U.S.C. 103(a) as being unpatentable over Friedmann et al. '796. Claim 13 was rejected under 35 U.S.C. 103(a) as being unpatentable over Friedmann et al. '796 in view of Casse et al. Claims 16-18 and 21-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Friedmann et al. '796 in view of Blomquist. Claims 16 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Friedmann et al. '796 in view of Ross '885 and Blomquist. These rejections are respectfully traversed in view of the following remarks.

Regarding US 5.377.796 to Friedmann et al. (see FIG. 8), the hydrokinetic apparatus as shown in Fig. 8 comprise a piston 435 being axially slidably mounted in the cylindrical sleeve-like portion 450a of the hub 450, the second surface which "lies facing" the first surface of the

transverse wall is not the surface used for coupling the piston releasably to the transverse wall.

In Friedmann '796, it is not the second surface as designed by examiner but the opposite surface of the piston which is used for coupling, whereby the coupling is obtained when the opposite surface – so the real second surface according to the invention definition – is gripped in contact with the friction linings carried by the disc of the damper. Thus, the structure is here "inverse" as the piston slides axially in the direction of the turbine wheel and not of the transverse wall.

Considering the embodiments of the claimed invention, the friction means act between the piston and an element, like the hub for example, situated in facing relationship ... such element in Friedmann will be the transverse wall. But there is no need to have such friction means here as there is no contact between piston and transverse wall. The reference to element 449 concerns a washer and not a friction means, the function of the washer 449 is to couple in rotation the piston and the hub and not to avoid any direct contact.

In view of these facts, Friedmann '796 does not disclose the features of claim 1 or 26.

Regarding WO '663 (see Fig. 7), as explained in the original specification at page 3, lines 25 to 29, the invention applies to clutch of the monoface type (as shown in Fig 6 of this document) or to biface type (as shown in fig 7 considered by examiner). In such biface type of clutch, the piston 403 usually comes in contact with friction linings carried by a disc, thus, not directly with the transverse wall like in monoface.

Figure 7 of WO '663 does not disclose any friction means except the usual friction linings ... moreover there is no friction means acting between the surface of the piston (opposite to the second surface) and an element situated in facing relationship. This surface next to the turbine wheel, more precisely at the inner radial part of the piston, is here directly in contact with the hub 408 when the piston is sliding axially on the shaft 409.

In conclusion, WO '663 does not disclose the features of claim 1 or 26.

Regarding US Patent 4,177,885 to Ross, Ross '885 discloses a hydrokinetic apparatus but fails to disclose any friction means like in the present invention, the reference 92 relates to "a low force spring" see Col. 2, lines 52 to 58 functioning not to act as a friction means but to assist the piston in the initial engagement of the clutch.

The piston 44 is splined at 46 on the hub 34 of the turbine 18, there is no relative movement in rotation between the turbine and the piston as the piston is coupled in rotation with the hub (and not for example with the transverse wall thanks to tongues 23 like in the embodiment shown in the application drawings). Therefore, no friction means is necessary in such arrangement.

In conclusion, Ross '885 does not disclose the features of claim 1.

Because the independent claims 1 and 26 are allowable over the art of record, the corresponding dependent claims are likewise allowable because the rejections under 35 U.S.C. §103(a) cannot be sustained. The balance of the prior art fails to teach or render obvious the deficiencies of the prior art as discussed above.

Because none of the prior art of record teaches or suggests the arrangement of the instant

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invention, it is respectfully submitted that this application is in condition for allowance and notice to that effect is earnestly solicited. Should the Examiners believe additional discussion would advance the prosecution of the instant application, they are invited to contact the undersigned at the local telephone number listed.

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IN THE CLAIMS

Please amend claims 1-44 as follows.

1. (Amended) Hydrokinetic coupling apparatus, [especially for a motor vehicle,] comprising a casing (30) having a transverse wall (3) [and] adapted to be hydrokinetically coupled in rotation to a driving shaft, a turbine wheel (12) mounted within the casing (30) and fixed to a hub (14) which is adapted to be coupled in rotation to a driven shaft, a fixed first surface (1) on the transverse wall (3) of the casing (30), and a lock-up clutch interposed between [the] said turbine wheel (12) and [the] said transverse wall (3) and comprising a piston (4) carrying a second surface (2), which lies facing the first surface (1) for coupling it releasably to the transverse wall, wherein a friction means (60) acts between a face of the piston (4) [opposed to] opposite the second surface (2) and an element situated in facing relationship thereto, [characterised in that] wherein the piston (4) is so configured as to carry the friction means (60).

2. (Amended) Hydrokinetic coupling apparatus according to Claim 1, [characterised in that] wherein one of the friction means (60) [or] and the piston (4) has at least one projecting element [(61, 166, . . .)] (61, 166, 1066, 1466, 2066, 2067) engaged in a complementary hole [(62, 66, . . .)] (62, 66, 161, 164, 266, 1266, 2068) of the other one of [the elements consisting of] the piston (4) and friction means (60).

3. (Amended) Hydrokinetic coupling apparatus according to Claim 2, [characterised in that] wherein the hole [(62, 66, . . .)] (62, 66, 161, 164, 266, 1266, 2068) is a blind hole.

4. (Amended) Hydrokinetic coupling apparatus according to Claim 3, [characterised in that] wherein the blind hole (62) is one of press-formed, [or] formed by drilling partway through [or] and by extrusion.

5. (Amended) Hydrokinetic coupling apparatus according to Claim 2, [characterised in that] wherein the hole (161) is a through hole.

6. (Amended) Hydrokinetic coupling apparatus according to Claim 5, [characterised in that] wherein the hole (66) has an oblong circumferential form.

7. (Amended) Hydrokinetic coupling apparatus according to Claim 5, [characterised in that] wherein the hole (164, 161) is cylindrical.

8. (Amended) Hydrokinetic coupling apparatus according to Claim 2, [characterised in that] wherein rivet means (366, 666, 966, 1166) are interposed between the friction means (60) and the piston (4).

9. (Amended) Hydrokinetic coupling apparatus according to Claim 8, [characterised in that] wherein the piston (4) carries at least one rivet (966, 1266) of the rivet means for fastening the friction means (60).

10. (Amended) Hydrokinetic coupling apparatus according to Claim 9, [characterised in that] wherein the at least one rivet (666) is carried [one] by the piston (4).

11. (Amended) Hydrokinetic coupling apparatus according to Claim 9, [characterised in that] wherein the at least one rivet (966) is integral with the piston (4).

12. (Amended) Hydrokinetic coupling apparatus according to Claim 8, [11, characterised in that the] wherein a head of the rivet (366) is engaged in a housing in the friction means (60).

13. (Amended) Hydrokinetic coupling apparatus according to Claim [1] 7, [characterised in that] wherein the friction means (60) is of synthetic material and comprises at least one body (261) engaged in the hole in the piston (4) and sealingly closing off [the] said hole (161) after hot working.

14. (Amended) Hydrokinetic coupling apparatus according to Claim 11, [characterised in that the] wherein a rivet head (966) is engaged in a rebate (866) in the friction means (60) after deformation.

15. (Amended) Hydrokinetic coupling apparatus according to Claim 1, [characterised in that] wherein the friction means (60) is formed by moulding over a projecting portion [(1066, 1166, . . .)] (1066, 1166) of the piston (4).

16. (Amended) Hydrokinetic coupling apparatus according to Claim 2, [characterised in that] wherein snap-fitting means (166, 1466, 161) are interposed between the piston (4) and the friction means (60).

17. (Amended) Hydrokinetic coupling apparatus according to Claim 16, [characterised in that] wherein the piston (4) has a projecting portion (1066) with a bead (1166), which may be of divided form, engaged in a hole of the friction means (60)[, such as a hole with a castellated contour].

18. (Amended) Hydrokinetic coupling apparatus according to Claim 17, [characterised in that] wherein the friction means (60) includes a point engaged in a groove of a projecting portion (1066), having a terminal bead (1067), of the piston (4), and [in that] wherein the groove is delimited by the piston (4) and the bead (1067).

19. (Amended) Hydrokinetic coupling apparatus according to Claim 16, [characterised in that] wherein at least one resilient lug (1466) having claws is engaged in [a] said hole in the piston (4).

20. (Amended) Hydrokinetic coupling apparatus according to Claim 2, [characterised in that] wherein a seaming means (1066, 766) is interposed between the piston (4) and the friction means (60).

21. (Amended) Hydrokinetic coupling apparatus according to Claim 18, [characterised in that] wherein the piston (4) has a projecting portion (1066, 2066) which is deformed by plastic flow of material into contact with a surface of the friction means (60) facing away from the piston (4).

22. (Amended) Hydrokinetic coupling apparatus according to Claim 21, [characterised in that] wherein the surface (766) is defined by a reduction in thickness.

23. (Amended) Hydrokinetic coupling apparatus according to Claim 22, [characterised in that] wherein the friction means (60) consists of a ring.

24. (Amended) Hydrokinetic coupling apparatus according to Claim 23, [characterised in that] wherein the friction means (60) consists of a plurality of annular sectors (160).

25. (Amended) Hydrokinetic coupling apparatus according to Claim 23, [characterised in that] wherein the hub (14) has a radial plate (15) fixed to the turbine wheel (12), and in that the friction means (60) acts between the radial plate (15) and the piston (4).

26. (Amended) Hydrokinetic coupling apparatus, [especially for a motor vehicle,] comprising a casing (30) having a transverse wall (3) [and] adapted to be hydrokinetically coupled in rotation to a driving shaft, a turbine wheel (12) mounted within the casing (30) and fixed to a hub (14) which is adapted to be coupled in rotation to a driven shaft, a fixed first surface (1) on the transverse wall (3) of the casing (30), and a lock-up clutch interposed between [the] said turbine wheel (12) and [the] said transverse wall (3) and comprising a piston (4) carrying a second surface (2), which lies facing the first surface (1) for coupling it releasably to the transverse wall (3), wherein the turbine wheel (12) includes an annular ring (13) which may be of divided form and which is fixed to the hub (14) by means of [a] at least one rivet (59), and wherein a friction means (60) acts between the hub (14) and the piston (4), [characterised in that]

and wherein the friction means (60) is carried by said at least one rivet (59).

27. (Amended) Hydrokinetic coupling apparatus according to Claim 26, [characterised in that] wherein at least one rivet (59) has a head projecting towards the piston (4) and having a thickened portion (159, 259) for fastening the friction means (60).

28. (Amended) Hydrokinetic coupling apparatus according to Claim 27, [characterised in that] wherein the thickened portion (159, 259) is at the free end of the head.

29. (Amended) Hydrokinetic coupling apparatus according to Claim 28, [characterised in that] wherein the thickened portion (159) is of constant width.

30. (Amended) Hydrokinetic coupling apparatus according to Claim 29, [characterised in that] wherein the thickened portion (259) is joined to the free end of the head through a portion of penetrating form.

31. (Amended) Hydrokinetic coupling apparatus according to Claim 30, [characterised in that] wherein the friction means (60) is moulded in place on the head.

32. (Amended) Hydrokinetic coupling apparatus according to Claim 31, [characterised in that] wherein the friction means (60) is snap-fitted on the thickened portion (159, 259).

33. (Amended) Hydrokinetic coupling apparatus according to Claim 32, [characterised in that] wherein the friction means (60) has a blind cavity (359) open towards the hub (14) for accommodating the thickened portion (159, 259).

34. (Amended) Hydrokinetic coupling apparatus according to Claim 33, [characterised in that] wherein the cavity (359) is delimited by L-shaped lugs (459) which are elastically deformable transversely and which are adapted to come into engagement with the face of the thickened portion facing away from the piston (4).

35. (Amended) Hydrokinetic coupling apparatus according to Claim 30, [characterised in that] wherein the friction means (60) is mounted on the thickened portion (159, 259) by a [bayonet-type] fitting whereby one member at least partially passes into another member.

36. (Amended) Hydrokinetic coupling apparatus according to Claim 30, [characterised in that] wherein the friction means (60) has, firstly, a cavity (360) open axially away from the piston (4) and being of oblong form circumferentially, for receiving the thickened portion (159), and secondly, an axially oriented passage (363) open on the side of the piston (4), and in that the

passage is so dimensioned as to enable the thickened portion to penetrate into the cavity before being riveted on the hub.

37. (Amended) Hydrokinetic coupling apparatus according to Claim 36, [characterised in that] wherein the cavity (360) includes at least one hole (362) through which riveting is carried out.

38. (Amended) Hydrokinetic coupling apparatus according to Claim 38, [characterised in that] wherein the piston (4) surrounds the axially oriented annular portion (16) of the hub (14) with a radial clearance.

39. (Amended) Hydrokinetic coupling apparatus according to Claim 38, [characterised in that] wherein the piston (4) is coupled to the casing (30) by axially elastic tongues (23), and [in that] wherein the tongues (23) are radially outside the second surface (2).

40. (Amended) Hydrokinetic coupling apparatus according to Claim 39, [characterised in that] wherein the friction means (60) has at least one passage (400) between its inner and outer peripheries to permit passage of a fluid.

41. (Amended) Hydrokinetic coupling apparatus according to Claim 40, [characterised in that] wherein the friction means (60) consists of a ring having, in at least one of its faces, a passage [such as a groove] extending from its inner periphery to its outer periphery.

42. (Amended) Hydrokinetic coupling apparatus according to Claim 41, [characterised in that] wherein the piston (4) is coupled to the casing (30) by axially elastic tongues (23), and [in that] wherein the tongues (23) lie facing the second surface.

43. (Amended) Hydrokinetic coupling apparatus according to Claim 42, [characterised in that] wherein the friction means (60) comprise a plurality of friction elements.

44. (Amended) Hydrokinetic coupling apparatus according to Claim 43, [characterised in that] wherein the friction means (60) is mounted with an axial clearance with respect to the thickened portion (159), and [in that] wherein the friction means (60) is in direct engagement on one of the turbine hub [or on] and the turbine wheel (12).